REMARKS

Reconsideration of this application is respectfully requested. The dependencies of claims 2 through 32 have been corrected to depend on independent claim 19. Similarly, the dependencies of claim 34 have been amended to depend on independent claim 33.

The indication of allowability of claims 26, 30 and 31 is appreciated. These dependent claims have been rewritten into independent form and should be in clear condition for allowance.

The rejection of claims 1, 15, 18 and 29 as being obvious over Ake et al. (U.S. Patent No. 6,058,855-Ake) in view of Knowles (U.S. Patent No. 5,787,823) is traversed.

Ake does not disclose or suggest combusting coal to purposefully generate carbon rich fly ash. Ake discloses a low-No_x coal burner but does not expressly teach minimizing the oxygen in a primary combustion zone to generate carbon rich fly ash.

To make the distinction between the present claims more clear, independent claim 1 has been amended require the amount of excess oxygen to be two percent or less. *See* spec. p. 3, paragraph 0002. There is no suggestion in Ake that the excess oxygen is 2% or less.

Ake also does not teach the generation of carbon rich fly ash to capture mercury. Ake teaches away from the claimed invention by "maintaining a predetermined operating temperature to liquefy ash within the combustion chamber." Ake, abstract. Ake does teach that the portion of fly ash that is not liquefied is collected in a bag house or precipitator. Ake does not teach that fly ash is to be disposed of to avoid injecting the

mercury into the atmosphere. *See* Ake, column 6, lines 35-43. Ake teaches reintroducing the fly ash into the combustion chamber. By reburning the fly ash, Ake teaches reintroducing any mercury collected on the fly ash back into the combustion chamber for eventual release in stack emissions. Accordingly, Ake teaches away from the claimed invention by failing to suggest that carbon rich fly ash is generated to capture mercury and by teaching: (i) liquefying fly ash before it has an opportunity to capture release mercury; (ii) minimizing the release of fly ash entrained in the flue gas, and (iii) recirculating captured fly ash back into the combustion zone.

Knowles does not teach or suggest combusting coal in a combustion zone having no or less than two percent excess oxygen. There is also no suggestion in Knowles to generate carbon rich fly ash in the combustion zone. Accordingly, Knowles does not teach or suggest the invention recited in claims 1, 15, 18 and 29.

The rejection of claims 14, 16 and 17 for obviousness in view of Ake and Knowles as applied to claim 1 and further in view of Pennline (U.S. Patent No. 6,521,021) is traversed for the reasons stated above with respect to claim 1. In addition, Pennline does not suggest generation of carbon rich fly ash by combusting coal without excess oxygen or in with less than two percent of excess oxygen. Pennline teaches away from the claimed invention by suggesting that an adsorbent is injected upstream of a particulate control device (34) as a means for capturing mercury. In the claimed invention, the injection of an adsorbent upstream of a particular control device may be done to supplement the generation of carbon rich fly ash in the combustion zone. Pennline

teaches that the injection of an adsorbent is sufficient to capture mercury and thereby teaches away from the claimed invention of generation of carbon rich fly ash in the combustion zone to capture mercury. To further distinguish Pennline, independent claims 1, 19, 33 and 35 have been amended to require the fly ash to be entrained in the flue gas and not extracted as done in Pennline.

The rejection of claims 1-14, 18-25, 27, 28 and 32-38 as being obvious over Rini et al (U.S. Patent No. 5,315,939) in view of Pennline is traversed.

Rini discloses a Low-No_x firing system for a coal fired furnace, but not disclose or suggest any means for capturing mercury released by the combustion or processing fly ash generated during the combustion. There is no suggestion in Rini that mercury released during combustion is captured by carbon rich fly ash generated during the combustion or that the fly ash with captured mercury should be processed to reduce the amount of mercury released to the atmosphere.

As discussed above, Pennline teaches away from using fly ash entrained in the flue gas to capture mercury. Pennline teaches the use of a "thermally activated sorbent stream 48" which is injected in the flue gas downstream of combustion to capture mercury. The sorbent stream includes fly ash removed from the combustion gases and cooled separately from the gas stream and may include chemical or physical treatments to enhance its reactivity with mercury. Pennline, column 4, lines 30-40.

Pennline if applied to Rini would modify the Rini furnace such that fly ash generated during combustion is extracted from the flue gas stream, treated and

reintroduced downstream of combustion. This is contrary to the claimed invention. Because the combination of Rini and Pennline does not teach or suggest the claimed invention, the rejection should be withdrawn.

All claims are in good condition for allowance. If any small matter remains outstanding, the Examiner is requested to telephone applicants' attorney. Prompt reconsideration and allowance of this application is requested.

Respectfully submitted,

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